Correlates of Gay and Lesbian Couples' Relationship Satisfaction and Relationship Dissolution

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ABSTRACT. A sample of committed gay and lesbian cohabiting couples engaged in two conversations after being apart for at least 8 hours: (a) an events of the day conversation and (b) a conflict resolution conversation. Physiological data were collected during the conversations and a videotape record was made. Couples viewed the videotapes and rated their affect during the interaction. The video records were coded with a system that categorized specific affects displayed. Models derived from physiology, from the perception of interaction, and from specific affective behavior were related to relationship satisfaction, and to the prediction of relationship dissolution over a 12-year period. Results supported previous findings that satisfaction and stability in gay and lesbian relationships are related to similar emotional qualities as in heterosexual relationships.

KEYWORDS. Relationships, interaction, stability, dissolution, emotions, humor, affection, criticism, contempt, prediction

Understanding the ways that gay and lesbian relationships are different from each other and from those of heterosexual couples is important to any comprehensive accounting of the nature of intimate relationships. In Kurdek's review of the literature, he concluded that, by and large, the "correlates of relationship quality have been found to be very similar for gay and lesbian couples" (Blumstein and Schwartz, 1983; Duffy and Rusbult, 1986; Kurdek and Schmitt, 1986; Kurdek, 1992, p. 130). Longitudinal research on gay, lesbian and heterosexual married couples by Kurdek and his associates (e.g., Kurdek, 1998) has generally concluded that gay and lesbian relationships operate on essentially the same principles as heterosexual relationships; however, some differences were found. Compared to married spouses, gay partners reported more autonomy, fewer barriers to leaving and more frequent relationship dissolution. Compared to married spouses, lesbian partners reported more intimacy, more autonomy, more equality and more frequent relationship dissolution. He wrote, "Overall, the strength with which the dimensions of relationship quality were linked to each relationship outcome for married partners was equivalent to that for both gay and lesbian partners" (Kurdek, 1998, p. 553).

The existing quantitative research on gay and lesbian relationships has revealed important information about the nature of these relationships. However, it has relied entirely on *self-reports using questionnaires* (e.g., Kurdek, 1992), or questionnaires and interviews (e.g., Blumstein & Schwartz, 1983). While these forms of data produce valuable "insider" information, they are limited to people's *perceptions* about their own relationships. There is considerable evidence that people's perception of their relationships may diverge markedly from their actual interaction. For example, in an observational study of positive interaction at home, Robinson and Price (1980) found that, compared to observers, distressed couples underestimated their own positive interaction by 50%.

INTENDED CONTRIBUTIONS OF THE CURRENT STUDY

This paper seeks to glean new information by employing observational (outsider) methods to study partner interactions in gay and lesbian relationships as well as insider ratings of interaction. In this study we employed a multi-method approach that permitted measuring and assessing the utility of three different kinds of measures for predicting relationship satisfaction and dissolution: (1) insider's perception of the relationship via self-report, (2) observed interactive behavior using coding of specific emotions, and (3) couple's physiology during interaction. To our knowledge this is the first study that has used this multi-method perspective to study gay and lesbian relationships. We will review research with each method.

Hypotheses of this Study

Insider's perception of the relationship. Kurdek and his associates applied the investment, or what may be called a "cost-benefit" model of Rusbult (1983) to gay and lesbian relationships. This model suggests that relationship satisfaction is associated with incurring few costs (e.g., conflict) and receiving many rewards (e.g., companionship). Support for this model comes from studies of concurrent relationship satisfaction and longitudinal prediction of relationship satisfaction in both heterosexual and homosexual samples (Duffy and Rusbult, 1986; Kurdek, 1991; Kurdek and Schmitt, 1986; Rusbult, 1983). An unaddressed methodological issue with this line of research is common method variance. Because questionnaires are used to assess both the processes and

outcomes of relationships, it is possible that they may simply be measuring the same construct in the same way. In our study, we used a video recall and rating methodology to assess key insider variables in this cost-benefit model, namely, rewards and costs, as well as expectancy and empathy. This video recall methodology has demonstrated validity in previous studies (Gottman and Levenson, 1985) and reduces the problem of common method variance.

Observed interactive behavior using coding of specific emotions. Beginning in the 1970s research with married couples has shown that positive and negative affect are consistently related to relationship satisfaction (for reviews, see Gottman, 1979, 1994). In the past few decades this research has become more precise about the positive and negative emotions involved, examining, for example, differential roles played by specific negative emotions such as sadness, anger, and contempt.

Couple's physiology during interaction. In a series of studies with married couples, Gottman and Levenson demonstrated that the couple's level of physiological activation during marital interaction was related to concurrent marital unhappiness and was predictive of the deterioration of marital satisfaction over time (e.g., Levenson and Gottman, 1983; Gottman and Levenson, 1992). The higher the level of physiological arousal, the more likely that the relationship satisfaction deteriorated over time. We now investigate whether this finding will hold with gay and lesbian relationships.

This Was a Long-Term Longitudinal Study

For the remaining twelve years of this longitudinal study, data were collected on relationship status. In the years between 1987 and 1999, eight couples broke up (20%), one gay couple and seven lesbian couples. This breakup rate for homosexual couples, if it were to be computed over a 40-year period would be 63.5%, which is quite comparable with Bumpass and Martin's (1989) 67% breakup rate for first marriages among heterosexual couples within a 40-year period.

Hypotheses to Be Tested

In the present 12-year longitudinal study we analyze the efficacy of these three kinds of measures for accounting for relationship satisfaction and for predicting relationship dissolution in gay and lesbian cohabiting couples. These measures are used to create three models; the models are pitted against one another to do two tasks: (1) accounting for

variation in Time-1 relationship satisfaction, and (2) for predicting relationship dissolution or stability over the 12-year period.

Data reduction and the models. For purposes of this paper, only the data from the events of the day and conflict area conversation are utilized.

Perception of the interaction model. Following procedures used in our earlier studies (e.g., Levenson & Gottman, 1983), for each conversation we averaged the rating dial data obtained from each partner into 90 10-second periods. Following the Kurdek-Rusbult cost-benefit model, we defined the following variables from these perceptual data: (1) *Cost*, defined as the number of periods rated negatively by both partners during the events of the day and conflict area conversations, (2) *Cost and Benefit*, defined as the mean rating of initiator and partner for the events of the day and conflict area conversations (the rating can be positive or negative). In addition to these cost-benefit or investment model variables, we defined two additional types of variables: (3) *Expectancy*, defined as the mean rating in the five-minute pre-conversation periods prior to the events of the day and conflict area conversations; this variable is presumed to index the anticipated positivity of the forthcoming interaction; and (4) *Lack of Empathy*, defined as the number of periods rated positively by one partner and negatively by the other (and conversely), during the events of the day and conflict area conversations. These later two variables are also insider perception variables in keeping with the Kurdek-Rusbult model; however, they do not directly assess cost or benefit, but rather emphasize perceived emotional connection in the relationship.

Our *hypotheses for this model* are that Time-1 relationship satisfaction and 12-year long-term stability will be related to: (1) lower perceived costs, (2) higher perceived benefits, (3) a more positive expectancy of the interaction, and (4) higher empathy (measured as lowered lack of empathy).

Specific emotions model. The Specific Affect Coding System (SPAFF; Gottman, McCoy, and Coan, 1996) was used to code the events of the day and conflict area conversations of all couples. SPAFF focuses solely on the specific affects expressed. The system draws on facial expression (based on Ekman and Friesen's system of facial action coding; Ekman & Friesen, 1978), vocal tone, and speech content to characterize the emotions displayed. Coders categorized the affects displayed using five positive affect codes (interest, validation, affection, humor, excitement/joy), 10 negative affect codes (disgust, contempt, belligerence, domineering, anger, fear/tension, defensiveness, whining, sadness,

stonewalling), and a neutral affect code. The dependent variables created were the total number of seconds duration of each SPAFF code out of the 900 seconds of the conflict area discussion.

Our *hypotheses for this model* are that Time-1 relationship satisfaction and 12-year long-term stability will be related to: (1) lower amounts of negative affect, and (2) higher amounts of positive affects.

Physiological model. Using the second-by-second data obtained for each physiological measure, means and standard deviations were computed for each partner during each of the three conversations for the entire 15-minute conversation and for the entire 5-minute pre-conversation period. Differences between the pre-conversation baseline and the mean physiological variable (mean minus baseline) for the interaction were the dependent variables and indicate *physiological reactivity*.

Generalizing from heterosexual relationships, our *hypotheses for this model* are that Time-1 relationship satisfaction and 12-year long-term stability will be related to lower physiological reactivity on every physiological channel.

In an exploratory fashion we will also explore differences between gay male and lesbian relationships.

METHOD

Participants

Gay and lesbian samples. Couples were recruited by placing advertisements in the classified sections of Berkeley and San Francisco gay newspapers, posting flyers, contacting various gay and lesbian groups, and making public service announcements on Bay area radio stations. Advertisements and announcements asked for "volunteer couples, including those with relationship problems, needed for a paid UC Berkeley research project on committed relationships."

Some selection criteria had to be implemented to make the current sample comparable to other gay and lesbian samples in the literature on the correlates of relationship satisfaction. We therefore required that partners had to be between the ages of 21 and 40 and living together in a committed relationship for at least two years. To insure cooperation and that we sampled from lower income as well as higher income subjects, respondents were paid $10.00 for completing a General Information Form and a modified version of the Locke-Wallace (Locke & Wallace, 1959). This questionnaire is normed to have a mean of 100 and a stan-

dard deviation of 15, similar to the intelligence tests. Based on these data, 40 couples were invited to participate in the second phase of the study. To insure a reasonable sampling of levels of relationship satisfaction, we established a score of 115 or higher for the partner's averaged Locke-Wallace scores as indicating a "happy" couple and below 115 as indicating an "unhappy" couple (the final sample consisted of 12 gay happy couples, 10 gay unhappy couples, 10 lesbian happy couples, and 8 lesbian unhappy couples. Other inclusion criteria were: (1) no more than a 10 year difference in ages between partners, (2) childless, (3) no previous committed (i.e., living together) heterosexual relationships, (4) discrepancy between partners in modified Locke-Wallace relationship scores of no more than 25 points, and (5) couple speaks English to one another at home. We planned that in subsequent studies we would systematically relax these restrictions.

The second phase of the study consisted of filling out a larger battery of questionnaires and coming to the Berkeley campus for three research sessions in the laboratory. Both partners attended the first session together and each partner attended one additional session separately. Each session lasted for two to three hours. Again, to insure cooperation, and that we sampled from lower income as well as higher income subjects, couples participating in this second phase were paid $40.00 for completing the laboratory sessions.

Demographics. The lesbians were an average of 29.3 years old, and the gay men were an average of 32.5 years old. The mean Locke-Wallace relationship satisfaction scores of the lesbians was 113.2, and the mean Locke-Wallace relationship satisfaction scores of the gay men was 116.0. The difference in age between gays and lesbians was statistically significant, $t(40) = 2.95$, $p < .01$. The difference in relationship satisfaction was not statistically significant, $t(40) = .19$, ns.

Interaction session. The procedures employed in this study were modeled after those developed and later validated by Levenson and Gottman (1983). Couples came to the laboratory after having not spoken to each other for at least eight hours. After recording devices for obtaining physiological measures were attached, couples engaged in three conversations: (a) discussing the events of the day; (b) discussing an area of continuing conflict and disagreement in their relationship; and (c) discussing a mutually agreed upon pleasant topic. Each conversation lasted for 15 minutes and was preceded by a five-minute silent period. During the silent periods and conversations, a broad sample of physiological measures was obtained and a video recording was made of the interaction.

For the events of the day conversion, subjects were simply told to discuss what had happened during the day. Prior to initiating the conflict area discussion, couples completed the Couple's Problem Inventory (Gottman, Markman & Notarius, 1977), in which they rated the perceived severity of 10 relationship issues on a 0-to-100 scale. During the conflict discussion partners were designated either "initiators" if they were the one presenting the issue, or "partner" if they were the recipient of the issue. Prior to initiating the pleasant topic discussion, couples completed a similar inventory, in which they rated the enjoyment they derived from 16 topics on a 0-to-100 scale. The experimenter used these inventories to help couples select the topics that were used in these two conversations.

Reliability of the SPAFF observational coding. Every videotape was coded in its entirety by two independent observers using a computer-assisted coding system that automated the collection of timing information; each coder noted only the onset of each code. A time-locked confusion matrix for the entire videotape then was computed using a 1-second overlap window for determining agreement of each code in one observer's coding against all of the other observer's coding (see Bakeman & Gottman, 1986). For the conflict area conversation, the Cronbach alpha generalizability coefficients summed over partners were: affection, .86; anger, .86; belligerence, .91; contempt, .67; defensiveness, .97; disgust (which was a rarely occurring code), .37; domineering, .84; humor, .96; interest, .75; excitement/joy, .56; sadness, .72; stonewalling, .75; fear/tension, .95; validation, .96; and whining, .81.

Insider's perception and the recall session. Several days later, partners returned separately to the laboratory to view the video recording of their interaction, while the same physiological measures were obtained and synchronized with those obtained in the interaction session. Despite the obvious limitations of a recall procedure such as potentially faulty memory or social desirability response biases, in previous research we established the predictive validity of this video recall procedure (Gottman & Levenson, 1985). We found, for example, that, even several days later, when triggered by seeing the videotape again many people physiologically relive their initial experience. Hence, we were confident that we could use it here. Partners used a rating dial to provide a continuous self-report of affect. The dial traversed a 180 degree path, with the dial pointer moving over a nine-point scale anchored by the legends "extremely negative" and "extremely positive," with "neutral" in the middle. Partners were instructed to adjust the dial continuously so that it always represented how they were feeling when they were in the inter-

action. Positive and negative periods were based on a dual z-score and raw score criterion as in Gottman and Levenson (1983). To be coded positive, the raw score average had to be greater than or equal to 6.0 (referenced to the original 1 to 9 affect rating dial scales) and the z-score had to be greater than or equal to 0.5. Thus, a positive classification meant that, for that period the pointer was actually on the positive portion of the dial (the raw score criterion) *and* was positive *relative* to the subject's range of ratings (the z-score criterion). To be coded negative, the raw score had to be less than or equal to 4.0 *and* the z-score had to be less than or equal to −0.5. Data supporting the validity of this procedure for obtaining continuous self-reported affect ratings have been presented elsewhere (Gottman & Levenson, 1985; Levenson & Ruef, 1992).

Physiological Measures

Seven physiological measures were obtained from each partner: (a) Cardiac interbeat interval (IBI): the interval between successive R-waves of the electrocardiogram was measured in msec; (b) Skin conductance level; (c) General somatic activity; (d) Pulse transmission time to the finger of the nondominant hand; the time interval was measured between the R-wave of the EKG and the upstroke of the peripheral pulse at the finger; (e) Finger pulse amplitude–the trough-to-peak amplitude of the finger pulse was measured providing an index of the amount of blood in the periphery; and (f) Finger temperature at the palmar surface of the first phalange of the middle finger of the dominant hand; and (g) Pulse transmission time to the ear–this time interval was measured between the R-wave of the EKG and the upstroke of peripheral pulse at the ear. This set of physiological measures was selected to sample broadly from major organ systems (cardiac, vascular, thermoregulatory, electrodermal, somatic muscle); to allow for continuous measurement; to be as unobtrusive as possible; and to include measures utilized in our previous studies of relationships (e.g., Levenson & Gottman, 1983) and emotion (e.g., Levenson, Ekman, Heider & Friesen, 1992). The computer was programmed to derive second-by-second averages for each physiological measure for each partner. The computer enabled synchronization between video and physiological data by controlling the operation of a device that superimposed the elapsed time on the video recording and a second device that recorded a synchronization tone on one of the audio channels of the videotape recording.

RESULTS

Recall that "initiator" refers to the person presenting the conflict issue, and "partner" to the recipient of the issue.

Perception of the Interaction Model. Recall that our hypotheses were as follows: Time-1 relationship satisfaction will be related to: (1) lower perceived costs, (2) higher perceived benefits, (3) a more positive expectancy of the interaction, and (4) higher empathy (measured as lowered lack of empathy). Table 1 is a summary of the correlations between the Rating Dial data and the initiator's and partner's relationship satisfaction. For hypotheses 1 and 2, Table 1 shows that for the initiator's relationship satisfaction, during the conflict area conversation higher benefit and lower cost were significantly correlated with higher relationship satisfaction; this is true for the partner as well, but the correlations are only marginally significant. Hence, Hypotheses 1 and 2 were supported by the data. During the events of the day conversation, the pattern is similar. For Hypotheses 3 and 4, on expectancy and empathy, respectively, there was only partial support. For Hypothesis 3, the expectancy variable (mean rating prior to events of the day and conflict area conversations) was significantly related to initiator satisfaction, and during conflict was related to partner satisfaction. For Hypothesis 4, the lack of empathy variable (periods rated negative by the initiator but positively by the partner) were significantly related to lower relationship satisfaction of both partners. Hence, these four hypotheses were generally supported by the data.

Specific Emotions Model. Our hypotheses for this model were that Time-1 relationship satisfaction would be related to: (1) lower amounts of negative affect *toward the partner*, and (2) higher amounts of positive affects *toward the partner*. Table 2 is a summary of the correlations between the SPAFF data and the initiator's and partner's relationship satisfaction. During the conflict area conversation: (a) less contempt, less sadness, and more humor by the initiator toward the partner were significantly related to higher initiator relationship satisfaction; (b) more affection and more humor by the initiator toward the partner were significantly related to higher partner relationship satisfaction; and (c) more humor and, surprisingly, greater tension/fear on the partner's part toward the partner were significantly related to higher partner satisfaction. During the events of the day conversation: (a) lower contempt and less domineering by the initiator toward the partner were significantly related to higher partner relationship satisfaction; (b) lower contempt by the partner toward the other partner was significantly related to lowered initia-

TABLE 1. Perceptual Model, Correlates with Relationship Satisfaction[1]

	Relationship Satisfaction Intitator	Partner
Initiator, Conflict		
Cost-Benefit: Mean Rating	.41**	.27a
Cost: Pds. rated negative by both	−.35*	−.26a
Empathy: Pds. rated neg. by I, pos. by p	.02	−.01
Empathy: Pds. rated pos. by I, neg. by p	−.01	−.15
Expectancy Model	−.06	−.26
Initiator, Events		
Cost-Benefit: Mean Rating	.40**	.28
Cost: Pds. rated negative by both	−.19	−.37*
Empathy: Pds. rated neg. by I, pos. by p	−.31*	−.35*
Empathy: Pds. rated pos. by I, neg. by p	.23	.09
Expectancy Model	.31*	.12
Partner, Conflict		
Cost-Benefit: Mean Rating	.33**	.34*
Expectancy Model	.25	.38*
Partner, Events		
Cost-Benefit: Mean Rating	.12	.22
Expectancy Model	.23	.09

a = p < .10; * p < .05, ** p < .01, *** p < .001

tor relationship satisfaction; and (c) more humor by the partner toward the other partner was significantly related to higher partner relationship satisfaction. Hence, except for the tension/fear variable during conflict toward the partner the hypotheses of this model were generally supported.

Physiological Model. We generalized from heterosexual relationships to create our hypotheses for this model, which are that Time-1 relationship satisfaction would be related to lower physiological reactivity on every physiological channel. Table 3 is a summary of the correlations between the physiological data and the initiator's and partner's relationship satisfaction.

TABLE 2. Affective Behavior, Correlates with Relationship Satisfaction

	Relationship Satisfaction	
	Intitator	Partner
Initiator, Conflict		
Affection	.29a	.31*
Anger	−.13	.09
Belligerence	−.05	−.04
Contempt	−.40**	−.17
Defensiveness	−.02	−.03
Disgust	.02	.22
Domineering	−.12	−.02
Fear	−.04	−.01
Humor	.34*	.33*
Interest	−.05	.18
Joy	−.03	−.04
Sadness	−.38*	−.29a
Stonewalling	−.03	.15
Validation	.15	.28a
Whining	.06	.13
Initiator, Events		
Affection	.24	.19
Anger	−.26	−.28a
Belligerence	−.03	−.09
Contempt	−.22	−.01
Defensiveness	−.28a	−.34*
Disgust	.02	.23
Domineering	−.27a	−.31*
Fear	−.19	−.13
Humor	.16	.23
Interest	−.12	−.06
Joy	−.03	−.12
Sadness	−.27a	−.29a
Stonewalling	.09	.02
Validation	−.15	−.10
Whining	.00	.01
Partner, Conflict		
Affection	.01	.07
Anger	−.08	−.22
Belligerence	.04	.03
Contempt	−.02	−.04
Defensiveness	−.03	−.04
Disgust	.21	.28a
Domineering	.25	.19
Fear	.09	.34*

	Relationship Satisfaction Intitator	Partner
Partner, Conflict		
Humor	.27a	.34*
Interest	−.23	−.04
Joy	.01	−.10
Sadness	−.22	−.17
Stonewalling	.12	.10
Validation	−.05	−.15
Whining	.22	.35*
Partner, Events		
Affection	.20	.08
Anger	−.02	−.01
Belligerence	−.30a	−.08
Contempt	−.31*	−.10
Defensiveness	−.28a	−.30a
Disgust	−.05	.09
Domineering	.00	.02
Fear	−.17	−.06
Humor	.28a	.35*
Interest	.03	.03
Joy	.06	−.03
Sadness	−.20	−.25
Stonewalling	.06	.01
Validation	.15	−.07
Whining	.11	.02

a = p < .10; * p < .05, ** p < .01, *** p < .001

During the events of the day conversation: (a) decrease in ear pulse transit time for the initiator was correlated with the initiator's higher relationship satisfaction; (b) decrease in finger pulse amplitude for the initiator was correlated with the partner's higher relationship satisfaction; and (c) decrease in interbeat interval for the initiator was correlated with the partner's higher relationship satisfaction. No other physiological reactivity measures were significantly related to relationship satisfaction. However, these three physiological relationships are all consistent with the notion that higher levels of physiological activation/arousal (i.e., shorter ear pulse transit times, smaller finger pulse amplitudes or greater vasoconstriction, shorter interbeat intervals or faster heart rates) during the events of the day conversation are associated with *higher* levels of relationship satisfaction. This is the *opposite* of what we predicted.

TABLE 3. Physiological Model (Deviation from Baseline) Correlates with Relationship Satisfaction

	Relationship Satisfaction	
	Intitator	Partner
Initiator, Conflict		
Ear Pulse Transit Time	−.07	−.03
Gross Motor Activity	.10	.10
Finger Pulse Amplitude	.05	.07
Interbeat Interval	.14	.12
Finger Pulse Transit Time	.18	.12
Skin Conductance Level	.16	.17
Finger Temperature	−.01	.01
Initiator, Events		
Ear Pulse Transit Time	−.54***	−.21
Gross Motor Activity	.19	.25
Finger Pulse Amplitude	−.26	−.31*
Interbeat Interval	−.23	−.32*
Finger Pulse Transit Time	−.07	−.04
Skin Conductance Level	.17	.15
Finger Temperature	−.16	−.18
Partner, Conflict		
Ear Pulse Transit Time	.06	.04
Gross Motor Activity	.04	.09
Finger Pulse Amplitude	−.06	−.03
Interbeat Interval	.23	.16
Finger Pulse Transit Time	.18	.15
Skin Conductance Level	−.08	−.12
Finger Temperature	.12	.24
Partner, Events		
Ear Pulse Transit Time	.00	−.08
Gross Motor Activity	−.17	−.13
Finger Pulse Amplitude	.25	.22
Interbeat Interval	.17	.22
Finger Pulse Transit Time	−.11	−.19
Skin Conductance Level	−.08	−.13
Finger Temperature	.14	.10

a = p < .10; * p < .05, ** p < .01, *** p < .001

Predicting Relationship Dissolution

Perception of the Interaction Model. Recall that our hypotheses were as follows: 12-year long-term stability will be related to: (1) lower perceived costs, (2) higher perceived benefits, (3) a more positive expectancy of the interaction, and (4) higher empathy (measured as lowered lack of empathy). There was only a small number of breakups (N = 8) in this sample, so these analyses should be considered somewhat speculative. We computed univariate correlations between the perception of interaction variables and relationship dissolution (1 = stable, 2 = dissolved). For Hypothesis 1, the cost variables: periods rated negatively by both during conflict, the correlations were −.02, during events, −.06. For Hypothesis 2, the cost-benefit variables (mean rating) for the initiator during conflict, the correlations were .09, during events, −.02; for the partner during conflict, −.15, and during events, −.15. For Hypothesis 3, the expectancy variables, for the initiator during conflict, the correlations were .41, $p < .01$, for events, .08; for the partner, during conflict −.29, and during events, −.17. For Hypothesis 4, the lack of empathy variables, for periods rated negatively by the initiator and positively by the partner during conflict, the correlations were −.05, and during events, −.06; for periods rated negatively by the partner and positively by the initiator during conflict, the correlations were .32, $p < .05$, and during events, −.04. In a discriminant function analysis with dissolution as the grouping variable, using all the cost and benefit variables for both conversations resulted in a canonical correlation of .36, with nonsignificant chi square, $\chi^2 (6) = 4.82$. For only the conflict discussion, the cost and benefit variables resulted in a canonical correlation of .24, with nonsignificant chi square, $\chi^2 (3) = 2.20$. Hence, Hypotheses 1 and 2 were not supported by the data.

However, Hypotheses 3 and 4, the expectancy and empathy variables during conflict *were* able to significantly predict relationship dissolution, resulting in a canonical correlation of .49, with significant chi square, $\chi^2 (4) = 10.25$, $p = .036$, with 82.9% correct classification. Couples with lower empathy and lower expectations for how positive their conversation would be were those most likely to break up.

Specific Emotions Model. Recall that our hypotheses for this model were that 12-year long-term stability would be related to: (1) lower amounts of negative affect, and (2) higher amounts of positive affects. Correlating the specific affect variables with a dichotomous relationship dissolution variable (1 = stable, 2 = dissolved), significant correla-

tions with the dissolution variable were found for: (a) the initiator's anger (.47, $p < .01$), the initiator's belligerence (.35, $p < .05$), and the partner's fear (.34, $p < .05$) during the conflict conversation; and (b) the initiator's interest (.43, $p < .01$), the partner's affection (.34, $p < .05$), and the partner's disgust (.35, $p < .05$) during the events of the day conversation. Putting all these variables for both conversations into a discriminant function analysis, the canonical correlation for all these variables together was .75, with χ^2 (6) = 31.07, $p < .001$, with 92.9% correct classification. For just the conflict interaction variables, the canonical correlation was .57, with χ^2 (3) = 15.64, $p = .002$, with 85.7% correct classification. Hence, these hypotheses were supported by the data.

Physiological Reactivity Model. Recall that generalizing from heterosexual relationships, our hypotheses for this model were that 12-year long-term stability would be related to lower physiological reactivity on every physiological channel. Correlating the physiological reactivity variables with a dichotomous relationship dissolution variable (1 = stable, 2 = dissolved), significant correlations with the dissolution variable were found for: (a) the initiator's interbeat interval ($-.38$, $p < .05$) and the partner's interbeat interval ($-.42$, $p < .01$) during the conflict conversation; and (b) the partner's interbeat interval ($-.48$, $p < .001$) during the events of the day conversation. This means that couples with higher heart rate were more likely to dissolve their relationships. Performing a discriminant function analysis with these four variables resulted in a significant canonical correlation of .52, with χ^2 (4) = 11.76, $p = .019$, with 76.2% correct classification. Hence, for just these cardiovascular measures, this hypothesis was supported by the data.

Gay/Lesbian Differences

Using the Fisher r-to-z transformation test, we tested differences between gay and lesbian couples in the size of the correlations in the three models. Again, these tests should be considered merely exploratory due to small sample size.

Perception of the Interaction Model. None of the correlations were significantly different between gay and lesbian couples.

Specific Emotions Model. The only significant differences between gay and lesbian couples were that: (a) the correlation between partner's affection during the conflict area and partner's relationship satisfaction was larger for lesbians (.62) than for gays (.03), Fisher's $z = 2.18$, $p < .05$;

(b) the correlation between initiator's validation during the conflict area and initiator relationship satisfaction was larger for gays (.46) than for lesbians (−.29), Fisher's $z = 2.39$, $p < .01$; and (c) the correlation between initiator's sadness during the events of the day and lower partner satisfaction was larger for lesbians (−.58) than for gays (.26), Fishers $z = 2.78$, $p < .01$.

Physiological Model. The only significant differences between gay and lesbian couples were that: (a) the correlations between initiator's skin conductance during the events of the day and initiator's relationship satisfaction were larger for gays (−.48) than for lesbians (.15), Fisher's $z = 2.01$ ($p < .05$); (b) the correlations between partners skin conductance during events of the day and partner's relationship satisfaction were larger for gays (−.51) than for lesbians (.22), Fisher's $z = 2.34$ ($p < .01$).

DISCUSSION

In this first multi-method study of gay and lesbian relationships we analyzed the efficacy of three models, each using different kinds of data, to account for relationship satisfaction and to predict relationship dissolution. The three models were: (1) the insider's perception of the relationship using partner's own rating of the emotional quality of their interactions, (2) the observed interactive behavior using specific emotions coding, and (3) the couple's physiological reactivity during interaction.

Consistent with previous research on heterosexual relationships (Levenson & Gottman, 1983; Levenson & Gottman, 1985), the couple's physiological reactivity during interaction was related to relationship satisfaction. This finding obtained for three cardiovascular variables, pulse transit time to the ear, finger pulse amplitude, and interbeat interval. These cardiovascular variables were also able to predict relationship dissolution. Interestingly, whereas with heterosexual couples *high* levels of physiological arousal were found to be associated with lower relationship satisfaction and higher risk for relationship dissolution, in gay and lesbian couples it was *low* levels of arousal that were related with these negative outcomes. Thus, perhaps for healthy gay and lesbian relationships a higher level of physiological activation is more optimal. Why should this be the case? We suggest that for gay and lesbian couples physiological reactivity may be related to mental effort, in-

volvement, and emotional engagement, and that it thus may index a positive state of involvement rather than detachment.

Our results were consistent with Kurdek and Rusbult's investment, or cost-benefit model, which suggested that relationship satisfaction is associated with low costs and high rewards. Our findings also provide important additional support for this model by removing the common method variance problem that has plagued earlier studies that used questionnaire measures to assess both predictor and criterion variables. In our study, we used a video recall and rating methodology to assess rewards and costs (as well as expectancy and empathy) and questionnaires to assess relationship satisfaction. Our findings also suggest that higher benefits and lower costs, as well as a higher expectancy of positive interaction and greater empathy (i.e., both partners agreeing on the affective tone of segments of the interaction) are all related to higher relationship satisfaction. We believe that our addition of these new constructs of expectancy and empathy further expands and enriches the cost-benefit model. This belief draws support from our finding that only our expectancy and empathy variables were able to predict relationship dissolution. This suggests that more subtle measures of relationship rewards and costs, ones more directly related to the quality of emotional connection between partners, may be better lead indicators of the ultimate fate of the relationship than variables that only tap the positivity or negativity of the interaction. Of course, our measures of positivity and negativity are not directly comparable to the Kurdek-Rusbult variables because we did not use questionnaires to assess them.

In analyzing observed interactive behavior using specific emotions, contempt, disgust, and defensiveness were related to lower levels of relationship satisfaction, and the positive affects (humor, affection) were related to higher levels of relationship satisfaction. These results are entirely consistent with those found previously in other research on married couples (e.g., Gottman & Levenson, 1992; Gottman, 1994; Gottman, Coan, Swanson, & Carrère, 1998). Surprisingly fear/tension was positively related to relationship satisfaction, and perhaps this is similar to the finding that physiological reactivity for gay and lesbian couples is positively related to relationship satisfaction.

Only some of these models' variables were also able to predict relationship dissolution or stability. For the Insider Perception Model only expectancy and empathy and not the cost/benefit variables were able to predict the ultimate fate of the relationship.

The fact that the specific affect data were so strongly able to predict relationship dissolution was not surprising, as these data have replicated three times with heterosexual couples.

Our findings for the cardiovascular variables of the Physiological Reactivity Model are entirely consistent with the data for heterosexual couples: higher heart rates predicted relationship dissolution. Why would reactivity relate to concurrent relationship satisfaction but then be predictive of dissolution? We suspect that in the long-term situation higher heart rates may be tapping *chronic levels of reactivity*. It makes sense that temporary reactivity might be a good thing but that chronic levels of reactivity would be harmful. To fully test this interpretation of the data, we would need to conduct a study in which we obtained repeated observational and physiological data over the long term.

The differences in what accounted for variance in relationship satisfaction for gay male versus lesbians was interesting. For lesbians affection was more important than it was for gay males, while for gay males validation was more important than it was for lesbians. This appears to be a difference in the nature of the emotional expression that the two relationships may need. Affection is a more loving, overtly demonstrative act, whereas validation is a more cognitive act. Both convey support, but they do it differently. This interpretation of the data is consistent with the fact that physiological arousal (skin conductance) was negatively related to relationship satisfaction for gay males but positively related to it for lesbians. In same-sex relationships, men may prefer less arousal and less emotion in their closest relationships than women. These conclusions are certainly consistent with views of gender that emerge from studying heterosexual relationships.

In conclusion, our findings (except for the physiological variables) generally support Kurdek's conclusion that gay and lesbian relationships operate on essentially the same principles as heterosexual relationships. The one contrary finding, that high levels of cardiovascular arousal are associated with high levels of concurrent satisfaction (but not stability) in homosexual relationships but low levels of satisfaction and stability in heterosexual relationships is intriguing but will clearly require replication.

NOTE

1. Empathy and Cost variables are not repeated for partner because they are the same for partner and initiator.

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